Case Study

BiOWiSH® Crop Liquid

Evaluation of BiOWiSH® Crop Liquid on Sugarcane in Goiás, Brazil


Sugarcane

Executive Summary

BiOWiSH Technologies conducted a field study in Itumbiara, Goiás, Brazil to test the efficacy of urea coated with BiOWiSH® Crop Liquid to create an Enhanced Efficiency Fertilizer (EEF) for sugarcane production.

The trial compared two treatments:

• Control, Standard Urea Fertility Program
• Control + BiOWiSH® Crop Liquid

The study determined that the addition of BiOWiSH® Crop Liquid optimized yield potential by improved nutrient uptake in sugarcane, resulting in a 23.6% yield increase in TAH (sugar production), which led to higher profit.

Background

About BiOWiSH Technologies
Headquartered in Cincinnati, Ohio, BiOWiSH Technologies, Inc. is a global provider of biotechnology solutions. As a leader in the agricultural market, we help farmers increase crop production sustainably, safely, and cost effectively. Our revolutionary BiOWiSH® Crop Liquid is a blend of proprietary microbial cultures that can be coated onto dry fertilizer or mixed with liquid fertilizers to create an enhanced efficiency fertilizer. BiOWiSH® endophytic *Bacillus* deliver soil nutrients to crops through the rhizophagy cycle creating a symbiotic relationship between the plant and soil microbes. This helps farmers achieve consistent results across a broad range of operating conditions, climates, and environments. By unifying nature and science, BiOWiSH reinvents the way food is grown. For more information, visit biowishtech.com.

BiOWiSH® Crop Liquid

- Optimizes yield potential by improved nutrient uptake
- Increases nutrient use efficiency and supports nutrient uptake
- Optimizes soil conditions for greater root mass
- Improves soil conditions for increased plant vigor
- Enhances beneficial microbes in the rhizosphere

Available Size

- 264 gal/1000 L

Objectives

The purpose of this trial was to evaluate the performance of BiOWiSH® Crop Liquid coated onto urea to create an Enhanced Efficiency Fertilizer (EEF) for sugarcane production in Goias, Brazil, compared to the Control. The evaluation focused on TCH (stalk yield), TAH (sugar production), and grower economics.

Implementation Program

The trial was conducted as a side-by-side farm test using the grower's standard fertility program, which included a mid-season application of urea fertilizer at a rate of 145 kg/ha (129 lbs/acre) applied as a topdress application 30 days after the previous harvest to restart the ratoon growth. The "CTC4"sugarcane variety is common to the region, and the trial was performed during the seventh year of production. The comparison treatment was urea coated with BiOWiSH® Crop Liquid at the manufacturer's recommended rate. The treatment areas were 6.9 hectares (17.0 acres) for the Control and 13.8 hectares (34.1 acres) for the Control + BiOWiSH® Crop Liquid. Yield was harvested by hand using three locations per strip and two rows per location. Stalk weights and sugar content were evaluated from a 10 linear meter (32.8 feet) area for comparison between the treatments.

Table 1. Treatments, Fertilizers, and Application Timings

Treatment	Application Rate kg/ha [lbs/acre]	Application Timing
Control, Standard Urea Fertility Program	145 [129]	Topdress
Control + BiOWiSH® Crop Liquid	145 [129]	Topdress

**BiOWiSH® Crop Liquid used at manufacturer's recommended rate.*

Results

Table 2. Stalk Yield and Sugar Production

Treatment	TCH - Stalk Yield MT/ha [tons/acre]	ATR - Total Recoverable Sugar kg of sugar/MT of stalk [lbs of sugar/tons of stalk]	TAH - Sugar Production MT/ha [tons/acre]
Control, Standard Urea Fertility Program	44.47 [19.83]	176.6 [353.3]	7.85 [3.50]
Control + BiOWiSH® Crop Liquid	54.19 [24.17]	178.9 [357.9]	9.70 [4.33]

**1 acre = 0.405 hectares*
***1 MT/ha = 0.446 US ton/acre*
****Calculations for conversions between imperial and metric units are based on the original source data; slight rounding differences may occur within reported publication values.*

Figure 1. TAH - Sugar Production

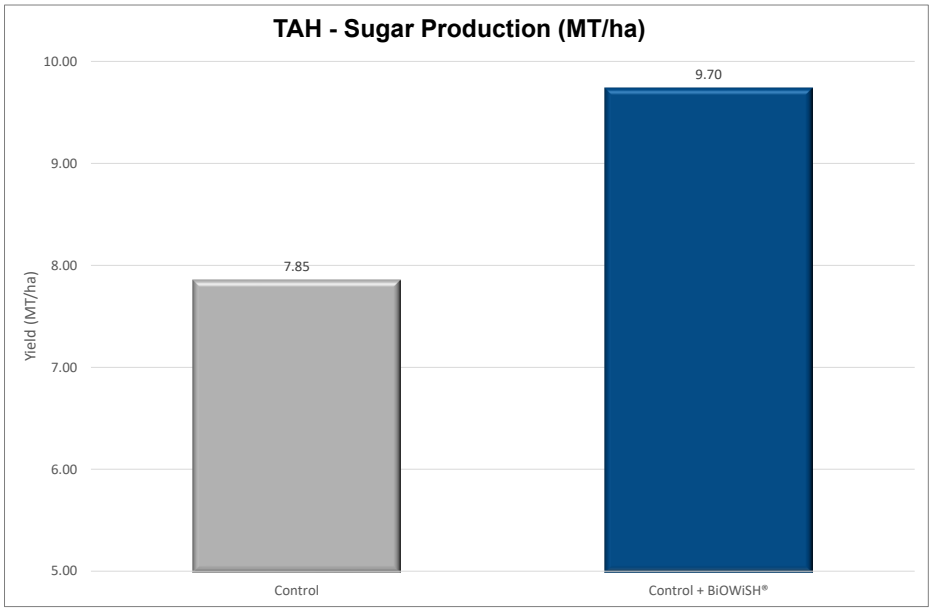

Table 3. Yield and Net Income Table

Treatment	TAH - Sugar Production MT/ha [tons/acre]	Yield Increase TAH MT/ha [tons/acre]	Yield Increase %	Net Income USD/ha [USD/acre]	Profit Change USD/ha [USD/acre]
Control, Standard Urea Fertility Program	7.85 [3.50]	-	-	1514 [613]	-
Control + BiOWiSH® Crop Liquid	9.70 [4.33]	1.85 [0.83]	23.6	1879 [761]	365 [148]

**Calculations for conversions between imperial and metric units are based on the original source data; slight rounding differences may occur within reported publication values.*
***Net income is the crop value minus the fertility program cost. It does not account for non-fertility expenses.*
****Profit change is the difference between net income of the respective program and the Control.*

Conclusion

BiOWiSH® endophytic *Bacillus* deliver soil nutrients to crops through the rhizophagy cycle creating a symbiotic relationship between the plant and soil microbes. This enables optimized yield potential by improved nutrient uptake, with a TAH (sugar production) yield increase of 23.6% for the BiOWiSH® treatment, over the Control. This increased profitability for the sugarcane grower in this study by $365 USD/ha ($148 USD/acre).

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